



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
SOLID WASTE AND EMERGENCY
RESPONSE

August 30, 2005

MEMORANDUM

SUBJECT: National Remedy Review Board Recommendations for the Summitville Mine Superfund Site

FROM: JoAnn Griffith, Chair
National Remedy Review Board

A handwritten signature in black ink, appearing to read "JoAnn Griffith".

TO: Charles Sutfin, Deputy Director
Office of Superfund Remediation and Technology Innovation

Purpose

The National Remedy Review Board (NRRB) has completed its follow-up review of the cleanup action for the Summitville Superfund Site in Rio Grande County, Colorado. This memorandum documents the NRRB's advisory recommendations.

Context for NRRB Review

The Agency commissioned an internal review committee to evaluate the Superfund program. The committee's report entitled, "Superfund 120 Day Study," made a recommendation (#41) as stated:

"OSWER should set up a review team of headquarters and regional staff to make sure that selected remedies at sites incorporate new technology and the most cost-effective cleanup approach based on experience since the remedies' selection."

As a result of the 120 Day Study, OSRTI decided to conduct such a review at two different sites Vineland Chemical Superfund Site and the Summitville Mine Superfund Site. Vineland was reviewed by the National Risk-based Priority Panel and the NRRB was asked to review the Summitville Mine Site. It is important to remember that the NRRB does not change the Agency's current delegations or alter in any way the public's role in site decisions.

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Overview of the Selected Action

The Summitville Mine Site is located in the San Juan Mountains of south central Colorado and includes approximately 580 acres of disturbed area. During the most recent mining period at the site (1984 through 1992), the mineral reserves were developed as a large tonnage, open-pit mining operation. Gold and silver were extracted from the ore in a large, on-site cyanide heap leach operation. The mine operator declared bankruptcy in 1992 at which time EPA assumed control of the site. Releases of acid mine drainage (AMD) from the site have affected surface water and sediments in the Alamosa River downstream of the site. The contaminants of concern include copper, zinc, aluminum, and iron. The Record of Decision (ROD) signed in 2001 called for the construction of a new water treatment plant (to replace an older plant) along with other measures designed to primarily to redirect surface water run-off. The selected remedy had already undergone an NRRB review in 2001.

NRRB Advisory Recommendations

To facilitate the review, a series of charge questions was developed that would be responsive to the 120 Day Study Recommendation. These questions were as follows:

- Are applicable or relevant and appropriate requirements (ARARs), especially water quality standards, appropriately applied in determining discharge levels?
- Are there significantly lower-cost technologies that currently could substitute for the selected technology?
- Are there any outstanding issues remaining from the previous Board review?

Additionally, the Agency undertook a series of studies to help guide the review process. These included a study of the water treatment plant design and an evaluation by the Office of Research and Development (ORD) focusing on the potential use of new technologies that have become available since the ROD was signed in 2001.

The NRRB reviewed the information package describing the Region's cleanup decision and the accompanying results of the studies mentioned above with Dale Vodenhal, James, Hanley, Brian Caruso, and Russ Leclerc from EPA Region 8 and Austin Buckingham, and Jeff Deckler from the State of Colorado on July 19, 2005. Based on this review and discussion, the Board offers the following comments:

1. Based on the information presented to the Board, the majority of the aluminum in the Alamosa River comes from non-site sources (upstream at Alamosa River Segment 3a). EPA Superfund policy is generally not to establish cleanup goals below background levels. Yet, at this site, the State is proposing discharge criteria for the water treatment plant, well below background levels. At the meeting, the State indicated that the lack of

assimilative capacity in the Alamosa River due to the high background in Segment 3a, requires that the Summitville treatment plant meet water quality standards at the end of the discharge pipe. Specifically, they indicated that a benefit of the discharge criteria was to meet the water quality standards at Alamosa River Segment 3c by diluting the elevated aluminum concentrations in the river. The proposed approach in this case would necessitate the construction of a two-stage water treatment plant with an incremental capital cost of \$7 million compared to a one-stage plant, even though the one-stage treatment plant which may produce an effluent consistent with background water quality. The Board recommends that the Region address the Superfund policy in light of the preferred remedy.

2. From the information presented to the Board, it is unclear whether a two-stage water treatment plant is necessary. For example, the package includes numerous statements and/or conclusions indicating a minimal improvement in water quality by adding the second stage. Specifically, the package states on page 15 that the main driver for non-compliance with the aluminum criteria is not the Summitville site or the choice between a one- and two-stage treatment system, but rather the predominant loading source is from Iron, Alum and Biter Creeks, which are upstream of Wightman Fork. As stated on page 16, the additional reduction in aluminum concentrations in the Alamosa River from the use of two-stage treatment is minimal and comes with an increase in capital costs and annual operation and maintenance costs. Given the minimal improvement on Alamosa River water quality, this expenditure may be of questionable benefit and significant cost savings may be realized by staying with one-stage treatment. Although the package appeared to provide justification for a one-stage water treatment plant, the Region and the State indicated that they believed two stages may be more appropriate. The Board recommends that the Region and State reconcile this apparent difference and ensure that the Administrative Record is clear on the preferred approach.
3. If the Region is going to consider something other than current aluminum discharge limits (i.e., background as discussed in a previous comment), then the Board recommends that both the concentration and the chemical form be evaluated at the point of compliance. The Board notes that aluminum toxicity can be measured in a variety of different ways (e.g., total recoverable aluminum, dissolved aluminum). If the goal of the state standard is to ensure removal of aluminum so as to be non toxic to fish, there may be flexibility in how that goal is met. Additionally, it is recommended that the Region evaluate whether national fish data was used in establishing the water quality information and whether the use of site-specific fish data is more appropriate.
4. A key justification for a two-stage water treatment plant is the application of the water quality standards for Alamosa River Segment 3c directly to the discharge from the treatment plant, even though Segment 3c is approximately eight miles downstream. Similarly, another key justification is the results of Whole Effluent Toxicity (WET) tests during water treatability studies. Based on the package and presentation to the Board, it is not clear whether the application of these requirements to the end of the pipe in these site-specific situations is based on State or Federal water discharge regulations or whether

it is an application of State or Federal policy. The Board recommends that the Region and the State further examine the basis for these proposed discharge requirements and explore whether the flexibility exists to determine which are truly ARARs and which could be modified (i.e., to allow other discharge limits or points of compliance which may be more appropriate for the stream sections near the point discharge).

5. If the WET test is being appropriately applied, then the Board recommends that the Region and the State evaluate whether there is flexibility in the selection of test organisms to ones which may be more appropriate for this river system.
6. Based on the discussions at the Board meeting, the existing single-stage treatment system at a minimum, is nearing the end of its useful service life, has possible safety issues, and is costly to operate and maintain. Therefore, the Board understands that a new treatment system is needed at the site. Since it is unclear, however, whether two treatment stages are necessary, the Board recommends that the Region evaluate a phased approach to constructing a new water treatment plant. The difference in timing, land utilization, and present value between building a full two-stage plant now and building the first stage now and second stage later, should be included. This phased approach would allow the impact of a one-stage plant on river Segments 3c and 3d to be evaluated to determine if the second stage is necessary. This phased approach would also allow the Region to further pursue the use of potential innovative technologies which in the future may lower treatment costs.
7. The aluminum and copper contaminants are expected to precipitate at different pHs in the proposed two-stage treatment process. From the chart presented at the meeting for the one-stage plant, it appeared that there were pH ranges that had a relatively positive effect on aluminum reductions while only marginally increasing copper concentrations. The Board recommends that the Region investigate or evaluate a single-stage treatment design with the pH adjusted to maximize the reduction of aluminum and copper concentrations with respect to aquatic toxicity.
8. The Board reviewed the conclusions presented by ORD that no alternative technology is now proven to work given the site specific considerations found at Summitville. That being the case, the Board recommends that the Region continue to keep informed on any future technology developments and consider potential pilots where there might be the potential for success.
9. Regarding a previous Board comment on whether the remedy constitutes restoration or is considered source control, the Board recognizes that this issue is being discussed on a national level with EPA Headquarters developing a memorandum to clarify the policy.

The Regional Support Branch will work with both myself and your staff to resolve any remaining issues as a result of this review. Thank you for your support and the support of your managers and staff in preparing for this review. Please call me at (703) 603-8774 should you have any questions.